GRASSLAND BYPASS PROJECT

MONTHLY DATA REPORT

July 2004

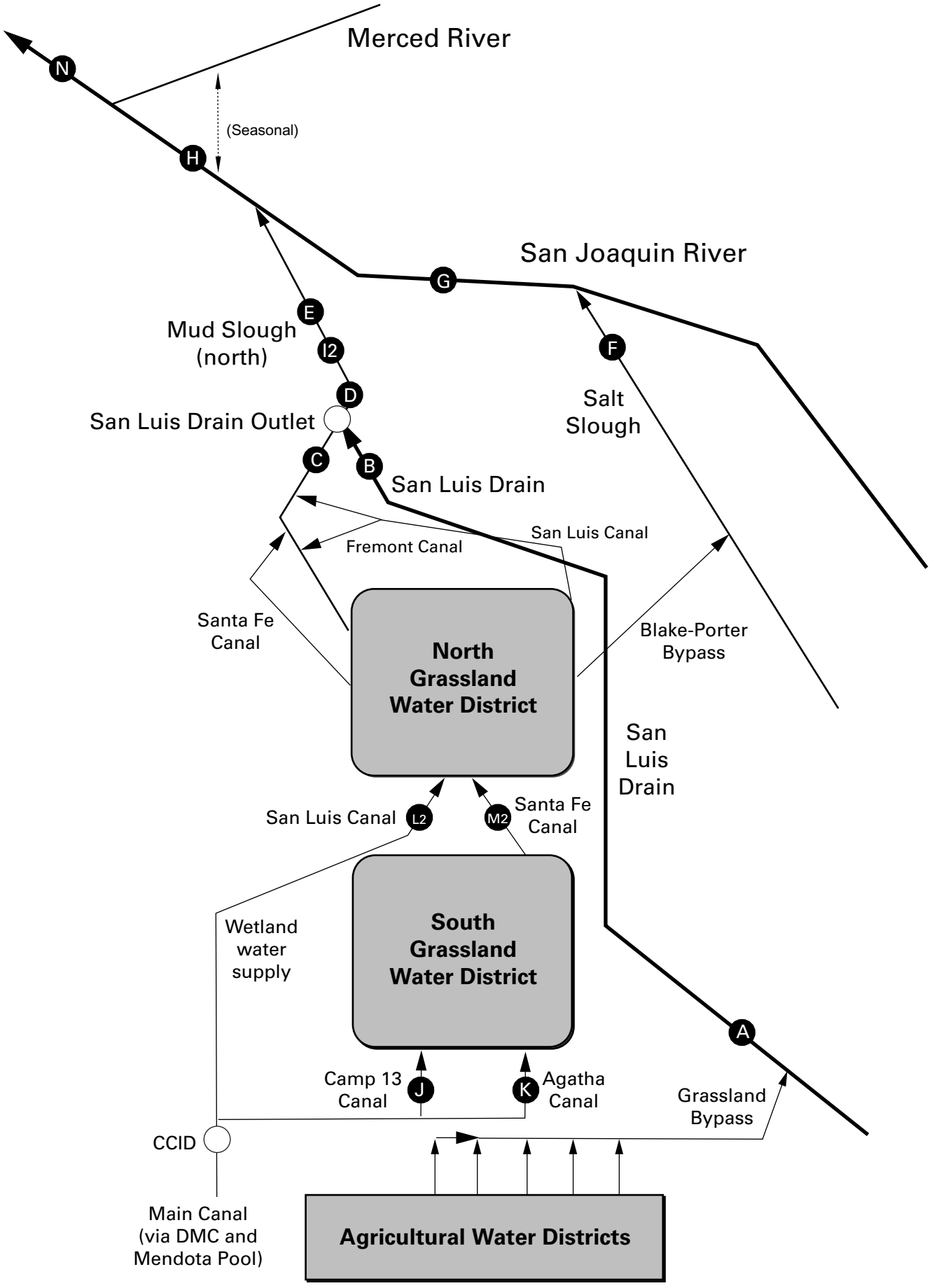
October 18, 2004

Preliminary Results

A cooperative effort of:

U.S. Bureau of Reclamation
Central Valley Regional Water Quality Control Board
U.S. Fish and Wildlife Service
California Department of Fish and Game
San Luis & Delta-Mendota Water Authority
U.S. Environmental Protection Agency
U.S. Geological Survey

compiled by San Francisco Estuary Institute


Merced River
N
(Seasonal)
H
San Joaquin River
G
E
Mud Slough
(north)
I2
F
D
San Luis Drain Outlet
Salt
Slough
C
B
San Luis Drain
San Luis Canal
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Canal
North
Grassland
Water District
Blake-Porter
Bypass
San
Luis
Drain
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L2
M2
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Canal
Wetland
water
supply
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A
Camp 13
Canal
J
K
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Canal
Grassland
Bypass
CCID
Main Canal
(via DMC and
Mendota Pool)
Agricultural Water Districts

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MONTHLY DATA REPORT

LIST OF TABLES FOR MONTHLY REPORT

Table 1. Continuous water monitoring at Station A (inflow to San Luis Drain), July 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Specific Conductance
DATA SOURCE	SLDMWA	SLDMWA
UNITS	cfs	µS/cm
Jul-01-2004	61	3,740
Jul-02-2004	62	3,800
Jul-03-2004	63	3,840
Jul-04-2004	62	3,900
Jul-05-2004	63	4,080
Jul-06-2004	59	4,170
Jul-07-2004	52	4,240
Jul-08-2004	53	4,140
Jul-09-2004	52	4,110
Jul-10-2004	54	3,870
Jul-11-2004	58	3,810
Jul-12-2004	56	4,120
Jul-13-2004	49	4,230
Jul-14-2004	46	4,180
Jul-15-2004	45	4,070
Jul-16-2004	47	3,800
Jul-17-2004	44	3,480
Jul-18-2004	43	3,260
Jul-19-2004	47	3,670
Jul-20-2004	55	3,750
Jul-21-2004	52	3,650
Jul-22-2004	52	3,650
Jul-23-2004	45	3,640
Jul-24-2004	43	3,500
Jul-25-2004	48	3,250
Jul-26-2004	45	3,290
Jul-27-2004	40	3,420
Jul-28-2004	38	3,300
Jul-29-2004	37	3,520
Jul-30-2004	42	3,610
Jul-31-2004	43	3,850
Mean	50	3,770

Table 2a. Continuous water monitoring at Station B (discharge from San Luis Drain), July 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Boron	Specific Conductance	Selenium (total)	Selenium (total) Load
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB	CVRWQCB	Computed
UNITS	cfs	°C	mg/L	µS/cm	µg/L	lbs
Jul-01-2004	57	23.9	P	3,730	31.0	9.5
Jul-02-2004	62	24.4	P	4,180	43.0	14.4
Jul-03-2004	62	25.0	P	3,870	37.3	12.5
Jul-04-2004	64	25.5	P	3,890	42.9	14.8
Jul-05-2004	63	26.5	P	3,960	42.8	14.5
Jul-06-2004	64	27.1	P	4,010	45.4	15.7
Jul-07-2004	59	27.1	P	4,120	46.9	14.9
Jul-08-2004	53	26.0	P	4,240	46.1	13.2
Jul-09-2004	55	25.4	P	4,230	47.3	14.0
Jul-10-2004	54	25.0	P	4,190	42.9	12.5
Jul-11-2004	55	25.7	P	4,080	40.2	11.9
Jul-12-2004	59	26.4	P	4,080	38.2	12.2
Jul-13-2004	57	26.7	P	3,830	37.4	11.5
Jul-14-2004	51	26.6	P	4,080	41.4	11.4
Jul-15-2004	48	26.3	P	4,110	39.7	10.3
Jul-16-2004	48	26.6	P	4,320	43.3	11.2
Jul-17-2004	49	26.8	P	4,380	45.0	11.9
Jul-18-2004	46	27.1	P	4,260	41.5	10.3
Jul-19-2004	45	27.3	P	4,080	36.2	8.8
Jul-20-2004	49	27.6	P	3,810	31.5	8.3
Jul-21-2004	56	27.7	P	3,670	27.6	8.3
Jul-22-2004	53	27.9	P	3,790	37.1	10.6
Jul-23-2004	51	27.9	P	3,830	38.0	10.5
Jul-24-2004	47	27.6	P	3,720	35.1	8.9
Jul-25-2004	46	27.4	P	3,750	33.6	8.3
Jul-26-2004	50	27.7	P	3,820	35.0	9.4
Jul-27-2004	47	27.9	P	3,730	30.5	7.7
Jul-28-2004	42	27.5	P	3,480	33.6	7.6
Jul-29-2004	40	26.5	P	3,490	29.8	6.4
Jul-30-2004	39	26.0	P	3,720	27.3	5.7
Jul-31-2004	43	25.6	P	3,690	27.0	6.3
Mean	52	26.5	P	3,940	37.9	10.8
Total Acre-feet	**3,200**					
Total (lbs)						**334**

Load Limitation for July 2004 (lbs)	**365**

Table 2b. Continuous water monitoring at San Luis Drain Outlet, July 2004.
Note: This is unofficial data reported for comparison with Station B.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	San Luis Drain Outlet Flow	Selenium (total) *	Selenium (total) Load
DATA SOURCE	USGS	CVRWQCB	Computed
UNITS	cfs	µg/L	lbs
Jul-01-2004	58	31.0	9.7
Jul-02-2004	64	43.0	14.8
Jul-03-2004	65	37.3	13.1
Jul-04-2004	65	42.9	15.0
Jul-05-2004	65	42.8	15.0
Jul-06-2004	65	45.4	15.9
Jul-07-2004	60	46.9	15.2
Jul-08-2004	54	46.1	13.4
Jul-09-2004	55	47.3	14.0
Jul-10-2004	42	42.9	9.7
Jul-11-2004	56	40.2	12.1
Jul-12-2004	59	38.2	12.2
Jul-13-2004	57	37.4	11.5
Jul-14-2004	51	41.4	11.4
Jul-15-2004	48	39.7	10.3
Jul-16-2004	47	43.3	11.0
Jul-17-2004	48	45.0	11.6
Jul-18-2004	45	41.5	10.1
Jul-19-2004	44	36.2	8.6
Jul-20-2004	49	31.5	8.3
Jul-21-2004	56	27.6	8.3
Jul-22-2004	53	37.1	10.6
Jul-23-2004	51	38.0	10.5
Jul-24-2004	47	35.1	8.9
Jul-25-2004	45	33.6	8.2
Jul-26-2004	50	35.0	9.4
Jul-27-2004	47	30.5	7.7
Jul-28-2004	41	33.6	7.4
Jul-29-2004	39	29.8	6.3
Jul-30-2004	39	27.3	5.7
Jul-31-2004	42	27.0	6.1
Mean	52	37.9	10.7
Total Acre-feet	**3,190**		
Total (lbs)			**332**

*Selenium (total) concentrations from Site B (San Luis Drain)

The US Geological Survey determines flow at Station B through continuous measurements of stage that is rated for a known cross-section. These flow data, listed in Table 2a, are verified with frequent current meter measurements.

Monitoring and Reporting Program No. 5-101-234 states:

"Samples representative of the discharge shall be collected from the San Luis Drain at the footbridge between Gun Club Road and the terminus (Site B)."

Accurate flow measurements are necessary to determine compliance with selenium load limits specified in Waste Discharge Requirement Order No. 5-101-234.

The accumulation of sediments, as documented in the 2001 Annual Report, have caused irregularities in flow measurements at Station B, resulting in "shifts" in the relationship between stage and discharge.

To improve the accuracy of flow measurements, Reclamation and the San Luis & Delta-Mendota Water Authority, with technical assistance from the USGS, are measuring flow at the San Luis Drain Outlet. The Outlet is located two miles from Station B. Discharge will be measured as stage over a sharp-crested weir, identical to Station A. This is a simpler and more accurate method that will not be altered by sediment accumulation.

This change is subject to approval by the California Regional Water Quality Board and modification of the Waste Discharge Requirement Order and Monitoring and Reporting Program. It is anticipated that flow will be measured solely at the Outlet works for determination of GBP flow discharge.

Unofficial flow data for the Outlet works are presented in Table 2b for comparison and are not used to determine compliance with the Waste Discharge Requirement Order.

Figure 2c. Monthly selenium discharges from the terminus of the San Luis Drain into Mud Slough compared to load values.

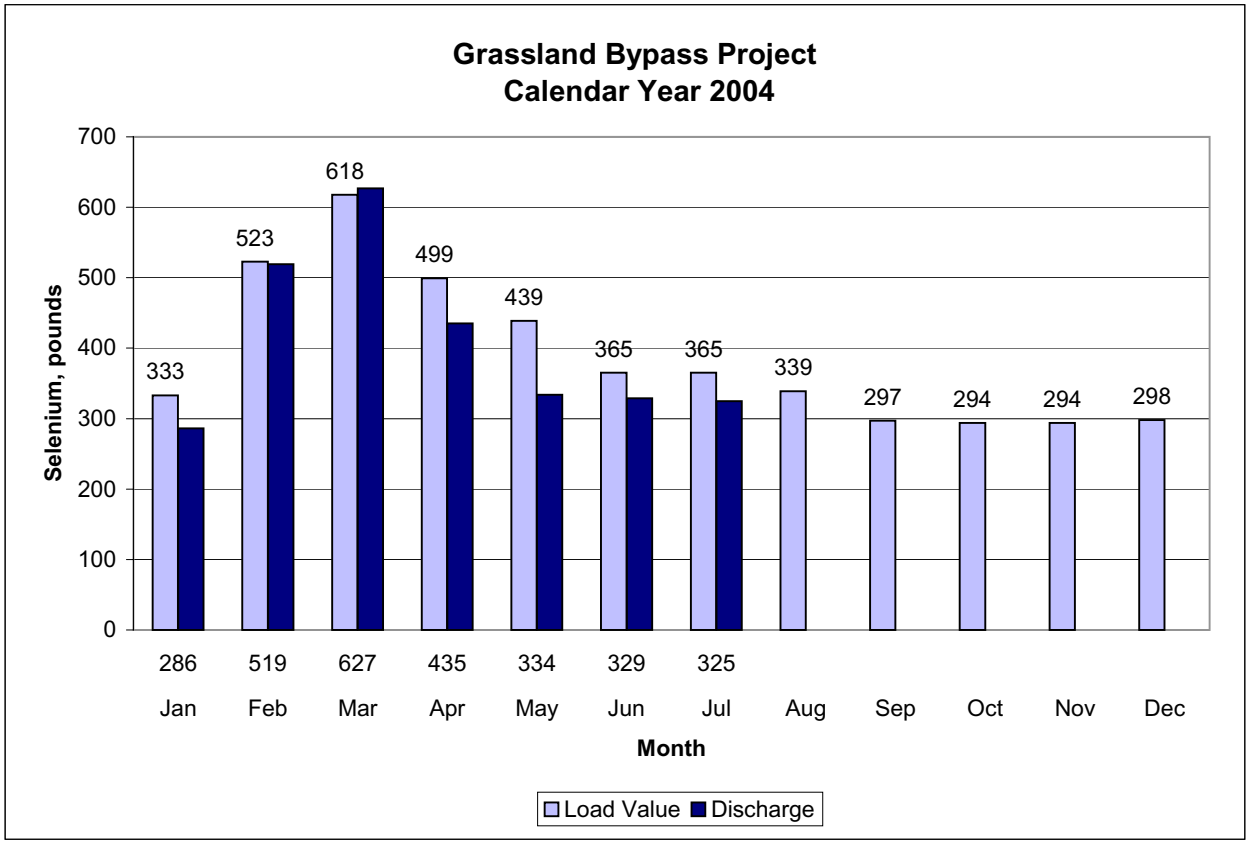

Table 3. Continuous water monitoring at Station D (Mud Slough North downstream of drainage discharges), July 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jul-01-2004	71	24.4	3,540
Jul-02-2004	83	25.0	3,530
Jul-03-2004	88	25.4	3,030
Jul-04-2004	98	25.8	2,770
Jul-05-2004	108	26.5	2,990
Jul-06-2004	121	27.0	2,890
Jul-07-2004	105	26.9	3,160
Jul-08-2004	83	26.1	3,540
Jul-09-2004	92	25.4	3,380
Jul-10-2004	89	25.0	3,350
Jul-11-2004	87	25.4	3,410
Jul-12-2004	99	25.9	3,170
Jul-13-2004	108	26.1	2,900
Jul-14-2004	94	26.1	2,900
Jul-15-2004	88	25.9	3,060
Jul-16-2004	89	26.1	3,050
Jul-17-2004	79	26.3	3,330
Jul-18-2004	68	26.6	3,450
Jul-19-2004	71	26.8	3,210
Jul-20-2004	71	27.2	3,270
Jul-21-2004	78	27.3	3,090
Jul-22-2004	71	27.7	3,350
Jul-23-2004	67	27.5	3,370
Jul-24-2004	64	27.4	3,250
Jul-25-2004	55	27.3	3,560
Jul-26-2004	62	27.5	3,530
Jul-27-2004	64	27.6	3,290
Jul-28-2004	55	27.4	3,300
Jul-29-2004	56	26.6	3,120
Jul-30-2004	56	26.3	3,070
Jul-31-2004	57	25.8	3,180
Mean	80	26.4	3,230

Table 4. Continuous water monitoring at Station F (Salt Slough at Highway 165), July 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance
DATA SOURCE	USGS	USGS	USGS
UNITS	cfs	°C	µS/cm
Jul-01-2004	112	23.8	1,090
Jul-02-2004	128	24.8	1,040
Jul-03-2004	145	25.4	970
Jul-04-2004	154	25.5	915
Jul-05-2004	161	26.6	890
Jul-06-2004	152	27.2	907
Jul-07-2004	139	26.7	975
Jul-08-2004	135	25.3	1,020
Jul-09-2004	NA	NA	NA
Jul-10-2004	NA	NA	NA
Jul-11-2004	NA	NA	NA
Jul-12-2004	NA	NA	NA
Jul-13-2004	168	26.3	965
Jul-14-2004	146	26.0	1,030
Jul-15-2004	141	25.7	1,040
Jul-16-2004	143	26.0	1,030
Jul-17-2004	165	26.2	1,010
Jul-18-2004	185	26.5	967
Jul-19-2004	186	26.6	973
Jul-20-2004	179	26.9	967
Jul-21-2004	159	27.1	983
Jul-22-2004	164	27.5	967
Jul-23-2004	173	27.3	945
Jul-24-2004	173	27.0	946
Jul-25-2004	145	27.0	988
Jul-26-2004	118	27.6	1,040
Jul-27-2004	106	27.9	1,110
Jul-28-2004	105	27.1	1,140
Jul-29-2004	103	25.9	1,130
Jul-30-2004	108	25.8	1,120
Jul-31-2004	120	25.2	1,080
Mean	145	26.3	1,010

Table 5. Continuous water monitoring at Station N (San Joaquin River at Crow's Landing), July 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	Specific Conductance	Selenium (total)
DATA SOURCE	USGS	USGS	CVRWQCB	CVRWQCB
UNITS	cfs	°C	µS/cm	µg/L
Jul-01-2004	368	25.8	1,650	4.4
Jul-02-2004	348	26.2	1,750	4.9
Jul-03-2004	374	26.7	1,730	5.8
Jul-04-2004	409	26.9	1,570	4.9
Jul-05-2004	448	27.5	1,390	5.0
Jul-06-2004	441	27.7	1,400	4.6
Jul-07-2004	428	27.3	NA	NA
Jul-08-2004	410	26.4	1,500	5.1
Jul-09-2004	412	25.5	NA	NA
Jul-10-2004	399	25.3	NA	NA
Jul-11-2004	430	25.5	NA	NA
Jul-12-2004	436	26.1	NA	NA
Jul-13-2004	446	25.8	NA	NA
Jul-14-2004	418	25.7	NA	NA
Jul-15-2004	385	25.5	NA	NA
Jul-16-2004	388	26.1	NA	NA
Jul-17-2004	397	26.1	NA	NA
Jul-18-2004	409	26.6	NA	NA
Jul-19-2004	455	26.6	NA	NA
Jul-20-2004	440	26.7	NA	NA
Jul-21-2004	415	27.0	NA	NA
Jul-22-2004	421	27.3	NA	NA
Jul-23-2004	404	27.2	1,390	P
Jul-24-2004	410	26.8	1,460	P
Jul-25-2004	425	26.6	1,380	P
Jul-26-2004	404	27.4	1,310	P
Jul-27-2004	397	27.3	1,380	P
Jul-28-2004	350	26.9	1,560	P
Jul-29-2004	349	26.2	1,650	P
Jul-30-2004	338	26.2	1,610	P
Jul-31-2004	344	26.2	1,530	P
Mean	400	26.5	1,520	5.0

Table 6a. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Total Suspended Solids	.	.	.
DATA SOURCE	SLDMWA	.	.	CVRWQCB	CVRWQCB	.	.	.
UNITS	cfs	.	.	µS/cm	mg/L	.	.	.
May-05-2004	43	.	.	4,330	300	.	.	.
May-12-2004	45	.	.	4,220	110	.	.	.
May-19-2004	37	.	.	3,960	NA	.	.	.
May-26-2004	41	.	.	4,280	110	.	.	.
Jun-02-2004	65	.	.	4,670	230	.	.	.
Jun-09-2004	47	.	.	4,690	170	.	.	.
Jun-16-2004	40	.	.	3,830	200	.	.	.
Jun-23-2004	38	.	.	4,170	150	.	.	.
Jun-30-2004	56	.	.	3,570	240	.	.	.
Jul-07-2004	52	.	.	4,230	130	.	.	.
Jul-14-2004	46	.	.	4,400	150	.	.	.
Jul-21-2004	52	.	.	3,660	110	.	.	.
Jul-28-2004	38	.	.	3,460	120	.	.	.

Table 6b. Weekly water quality monitoring at Station A (inflow to San Luis Drain), taken from composite samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	.	Selenium (total)	.	Boron
DATA SOURCE	SLDMWA	.	.	CVRWQCB	.	CVRWQCB	.	CVRWQCB
UNITS	cfs	.	.	µS/cm	.	µg/L	.	mg/L
May-04-2004	44	.	.	4,720	.	56.4	.	7.9
May-11-2004	38	.	.	4,310	.	48.4	.	7.4
May-18-2004	39	.	.	4,040	.	44.4	.	6.8
May-25-2004	39	.	.	4,040	.	33.3	.	6.9
Jun-01-2004	62	.	.	4,480	.	49.6	.	6.9
Jun-08-2004	46	.	.	4,600	.	50.6	.	7.3
Jun-15-2004	47	.	.	4,200	.	37.3	.	NA
Jun-23-2004	38	.	.	NA	.	NA	.	6.8
Jun-29-2004	58	.	.	3,970	.	32.8	.	NA
Jul-06-2004	59	.	.	4,090	.	40.7	.	P
Jul-13-2004	49	.	.	4,290	.	36.8	.	P
Jul-20-2004	55	.	.	3,910	.	31.9	.	P
Jul-27-2004	40	.	.	3,710	.	32.3	.	P

Table 7. Weekly water quality monitoring at Station B (discharge from San Luis Drain), taken from grab samples.

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Total Suspended Solids	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	mg/L	µg/L	mg/L
May-06-2004	42	23.1	8.2	4,740	49	57.4	7.8
May-13-2004	46	19.5	8.4	4,160	48	44.7	7.2
May-20-2004	39	20.9	8.2	4,560	66	55.8	7.4
May-27-2004	44	21.6	8.2	3,870	56	33.4	6.6
Jun-03-2004	64	24.4	8.3	4,680	67	54.6	8.0
Jun-10-2004	48	20.8	8.6	4,340	64	46.9	6.9
Jun-17-2004	41	24.0	8.5	3,620	51	30.1	NA
Jun-24-2004	41	23.4	8.3	4,080	48	33.8	7.2
Jul-01-2004	57	22.8	8.0	3,750	43	30.3	P
Jul-08-2004	53	24.9	7.8	4,380	54	48.2	P
Jul-15-2004	48	25.2	7.9	4,160	42	42.8	P
Jul-22-2004	53	27.4	8.3	3,980	53	42.0	P
Jul-29-2004	40	23.4	8.4	3,490	56	31.4	P

Table 8. Weekly water quality monitoring at Station C (Mud Slough North upstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	.	Selenium (total)	Boron
DATA SOURCE	calculated ++	CVRWQCB	CVRWQCB	CVRWQCB	.	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	.	µg/L	mg/L
May-06-2004	9	22.6	8.0	2,090	.	0.8	1.8
May-13-2004	49	20.1	8.1	1,110	.	0.8	0.9
May-20-2004	25	21.4	8.0	NA	.	0.6	1.3
May-27-2004	30	22.4	7.9	1,550	.	0.5	1.2
Jun-03-2004	7	24.0	8.3	2,290	.	0.8	1.7
Jun-10-2004	7	21.4	8.5	2,300	.	0.7	1.7
Jun-17-2004	10	25.2	8.1	1,630	.	0.7	NA
Jun-24-2004	6	22.9	8.0	1,730	.	0.6	1.2
Jul-01-2004	14	22.5	8.1	1,530	.	0.6	P
Jul-08-2004	30	24.7	7.9	1,250	.	1.0	P
Jul-15-2004	40	25.5	7.9	1,150	.	1.4	P
Jul-22-2004	18	29.1	8.2	1,280	.	0.9	P
Jul-29-2004	16	25.8	8.0	1,200	.	0.6	P

++ Calculated flow value. Flow at Station C = flow at Station D - flow at Station B.

Table 9. Weekly water quality monitoring at Station D (Mud Slough North downstream of drainage discharges).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
May-06-2004	51	23.0	8.1	4,180	41.2	6.2
May-13-2004	95	19.7	8.4	2,600	18.5	3.7
May-20-2004	64	20.9	8.2	3,030	25.8	4.1
May-27-2004	74	21.8	8.2	2,800	17.4	3.8
Jun-03-2004	71	24.6	8.3	4,400	46.2	7.1
Jun-10-2004	55	20.8	8.6	4,170	40.2	6.2
Jun-17-2004	51	24.3	8.4	3,530	26.9	NA
Jun-24-2004	47	23.2	8.3	3,800	27.4	5.5
Jul-01-2004	71	22.8	8.4	3,400	25.4	P
Jul-08-2004	83	24.7	8.1	3,480	31.2	P
Jul-15-2004	88	25.0	8.0	2,940	24.4	P
Jul-22-2004	71	27.6	8.3	3,120	21.1	P
Jul-29-2004	56	25.2	8.2	2,830	20.4	P

Table 10. Weekly water quality monitoring at Station I2 (Mud Slough backwater downstream of Station D).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER		pH	Specific Conductance	Turbidity	Selenium	Boron
DATA SOURCE		USBR	USBR	USBR	USBR	USBR
UNITS		.	µS/cm	NTU	µg/L	mg/L
May-07-2004	.	8.4	3,710	27	33.6	5.2
May-12-2004	.	7.9	3,310	20	23.0	4.7
May-19-2004	.	8.5	4,330	21	29.0	5.9
May-26-2004	.	8.5	4,870	45	12.8	5.3
Jun-01-2004	.	8.5	4,690	32	37.3	5.9
Jun-09-2004	.	8.5	3,960	19	35.4	5.8
Jun-17-2004	.	8.3	4,020	21	27.1	6.0
Jun-22-2004	.	8.6	4,180	17	29.7	6.4
Jul-01-2004	.	8.5	3,610	22	26.4	5.8
Jul-09-2004	.	7.9	3,340	15	29.8	5.4
Jul-15-2004	.	8.4	3,010	17	23.6	4.8
Jul-20-2004	.	8.3	3,400	20	23.6	5.7
Jul-27-2004		8.1	3,100	14	22.0	5.3

Table 11. Weekly water quality monitoring at Station F (Salt Slough at Lander Avenue).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
May-06-2004	133	21.2	7.8	1,360	0.7	0.6
May-13-2004	122	18.8	7.8	1,330	0.6	0.5
May-20-2004	119	19.9	7.6	1,320	0.7	0.5
May-27-2004	93	21.1	7.8	1,460	0.8	0.5
Jun-03-2004	120	23.0	8.0	1,190	0.8	0.5
Jun-10-2004	180	19.4	7.8	1,010	0.9	0.5
Jun-17-2004	153	22.9	7.7	1,100	0.6	NA
Jun-24-2004	117	22.4	7.8	1,130	0.7	0.4
Jul-01-2004	112	21.4	7.9	1,220	0.5	P
Jul-08-2004	135	22.0	7.8	1,110	0.7	P
Jul-15-2004	141	23.7	7.9	1,090	1.0	P
Jul-22-2004	164	26.1	8.1	966	0.7	P
Jul-29-2004	103	23.4	7.8	1,150	0.5	P

Table 12. Weekly water quality monitoring at Station J (Camp 13 Ditch).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
May-05-2004	20	.	.	570	1.1	0.3
May-12-2004	20	.	.	564	0.8	0.3
May-19-2004	20	.	.	588	0.7	0.3
May-26-2004	20	.	.	882	1.1	0.9
Jun-02-2004	5	.	.	1,390	1.2	1.6
Jun-09-2004	20	.	.	575	1.0	0.3
Jun-16-2004	15	.	.	502	0.8	NA
Jun-23-2004	15	.	.	762	1.6	0.7
Jun-30-2004	15	.	.	499	0.7	NA
Jul-07-2004	15	.	.	596	0.7	P
Jul-14-2004	5	.	.	523	0.7	P
Jul-21-2004	5	.	.	428	0.7	P
Jul-28-2004	5	.	.	581	0.8	P

Table 13. Weekly water quality monitoring at Station K (Agatha Canal).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
May-05-2004	40	.	.	560	1.0	0.2
May-12-2004	85	.	.	536	0.7	0.2
May-19-2004	85	.	.	522	0.8	0.3
May-26-2004	45	.	.	554	0.8	0.3
Jun-02-2004	25	.	.	600	0.9	0.3
Jun-09-2004	15	.	.	533	0.9	0.2
Jun-16-2004	25	.	.	444	0.8	NA
Jun-23-2004	35	.	.	447	0.6	0.2
Jun-30-2004	25	.	.	471	0.6	NA
Jul-07-2004	10	.	.	431	0.6	P
Jul-14-2004	5	.	.	439	0.8	P
Jul-21-2004	5	.	.	402	0.8	P
Jul-28-2004	5	.	.	415	0.7	P

Table 14. Weekly water quality monitoring at Station L2 (San Luis Canal at splits).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
May-05-2004	85	.	.	700	1.3	0.4
May-12-2004	45	.	.	642	1.0	0.4
May-19-2004	45	.	.	663	1.0	0.4
May-26-2004	90	.	.	721	1.2	0.5
Jun-02-2004	85	.	.	793	1.3	0.6
Jun-09-2004	65	.	.	1,000	1.7	0.8
Jun-16-2004	100	.	.	826	1.5	NA
Jun-23-2004	90	.	.	781	1.4	0.6
Jun-30-2004	50	.	.	895	1.3	NA
Jul-07-2004	30	.	.	955	1.5	P
Jul-14-2004	30	.	.	1,090	2.0	P
Jul-21-2004	50	.	.	798	1.5	P
Jul-28-2004	40	.	.	715	1.3	P

Table 15. Weekly water quality monitoring at Station M2 (Santa Fe Canal at weir).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	SLDMWA††	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	.	.	µS/cm	µg/L	mg/L
May-05-2004	30	.	.	1,350	2.5	1.7
May-12-2004	46	.	.	932	1.1	0.7
May-19-2004	65	.	.	1,170	1.2	1.2
May-26-2004	12	.	.	1,450	1.6	1.7
Jun-02-2004	2	.	.	1,630	1.7	2.2
Jun-09-2004	15	.	.	1,460	1.4	2.0
Jun-16-2004	6	.	.	1,140	1.2	NA
Jun-23-2004	2	.	.	904	1.2	0.8
Jun-30-2004	21	.	.	1,040	1.0	NA
Jul-07-2004	33	.	.	1,190	1.2	P
Jul-14-2004	35	.	.	926	1.0	P
Jul-21-2004	16	.	.	1,380	1.3	P
Jul-28-2004	7	.	.	1,310	1.0	P

Table 16. Weekly water quality monitoring at Central California Irrigation District Main Canal at Russell Avenue (MER510).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	.	.	.	µS/cm	µg/L	mg/L
May-05-2004	.	.	.	550	1.1	0.2
May-12-2004	.	.	.	524	0.8	0.2
May-19-2004	.	.	.	508	1.3	0.2
May-26-2004	.	.	.	518	0.8	0.2
Jun-02-2004	.	.	.	762	1.3	0.4
Jun-09-2004	.	.	.	517	1.0	0.2
Jun-16-2004	.	.	.	472	1.1	NA
Jun-23-2004	.	.	.	472	0.8	0.2
Jun-30-2004	.	.	.	437	0.6	NA
Jul-07-2004	.	.	.	408	0.6	P
Jul-14-2004	.	.	.	416	1.1	P
Jul-21-2004	.	.	.	341	0.8	P
Jul-28-2004	.	.	.	359	0.6	P

Table 17. Weekly water quality monitoring at Station G (San Joaquin River at Fremont Ford).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
May-06-2004	168	22.9	7.7	1,620	0.7	0.6
May-13-2004	167	20.5	7.8	1,560	NA	NA
May-20-2004	149	20.9	7.5	1,570	0.9	0.5
May-27-2004	131	22.7	7.8	2,150	0.5	0.7
Jun-03-2004	166	24.4	8.0	1,560	0.6	0.5
Jun-10-2004	198	21.2	7.9	1,040	0.8	0.5
Jun-17-2004	170	25.0	7.9	1,390	0.6	NA
Jun-24-2004	158	23.7	7.9	1,370	0.6	0.4
Jul-01-2004	137	23.3	7.5	1,510	0.5	P
Jul-08-2004	164	24.8	7.5	1,310	0.4	P
Jul-15-2004	159	24.8	7.5	833	0.9	P
Jul-22-2004	173	26.5	7.9	1,130	0.6	P
Jul-29-2004	126	24.8	8.1	1,390	0.4	P

Table 18. Weekly water quality monitoring at Station H (San Joaquin River at Hills Ferry).

(Collected data intended for use with biological monitoring.)

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	.	.	.	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	.	.	.	SLDMWA	SLDMWA	SLDMWA
UNITS	.	.	.	µS/cm	µg/L	mg/L
May-21-2004	.	.	.	2,510	9.3	2.1
May-25-2004	.	.	.	2,690	2.4	7.1
Jun-02-2004	.	.	.	1,860	0.6	0.4
June 8,2004	.	.	.	2,220	9.6	2.1
Jun-15-2004	.	.	.	2,130	8.6	2.0
Jun-22-2004	.	.	.	2,040	6.1	1.8
Jun-29-2004	.	.	.	2,020	6.3	1.9
Jul-07-2004	.	.	.	1,600	<0.4	0.3
Jul-13-2004	.	.	.	1,910	8.2	2.0
Jul-20-2004	.	.	.	1,620	4.9	1.6
Jul-30-2004	.	.	.	2,050	5.7	1.8

Table 19. Weekly water quality monitoring at Station N (San Joaquin River at Crow's Landing).

See Table 27 for explanation of footnotes and agency abbreviations.

PARAMETER	Flow	Temperature	pH	Specific Conductance	Selenium (total)	Boron
DATA SOURCE	USGS	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB	CVRWQCB
UNITS	cfs	°C	.	µS/cm	µg/L	mg/L
May-06-2004	1,820	18.9	7.9	494	1.6	0.4
May-13-2004	1480	18.2	7.8	581	1.5	0.4
May-20-2004	676	20.8	7.7	1,120	3.5	0.7
May-27-2004	587	23.6	8.0	1,290	2.2	0.8
Jun-03-2004	519	24.0	8.1	1,410	4.7	1.1
Jun-10-2004	481	22.8	8.3	1,520	5.1	1.1
Jun-17-2004	407	25.3	8.2	1,590	4.4	NA
Jun-24-2004	396	23.7	8.1	1,480	3.3	1.0
Jul-01-2004	368	24.3	8.0	1580	4.3	P
Jul-08-2004	410	25.0	8.0	1490	4.4	P
Jul-15-2004	385	24.3	8.3	1520	4.6	P
Jul-22-2004	421	25.1	8.0	1320	2.1	P
Jul-29-2004	349	24.5	8.2	1590	3.1	P

Table 20. Summary of fathead minnow (*Pimephales promelas*) larvae survival in 7-day tests using water samples collected from August 2003 to July 2004. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Aug-2003	95	98	95	93	95	98
Sep-2003	100	100	95	93	98	100
Oct-2003	100	100	93	100	100	100
Nov-2003	100	93	40*	100	75	100
Dec-2003	95	40*	53*	83	88	100
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	90	53*	85	100	100
Apr-2004	100	100	95	95	90	98
May-2004	100	100	100	100	100	100
Jun-2004	98	93	98	100	88	95
Jul-2004	100	90	93	88	98	98

Table 21. Summary of fathead minnow (*Pimephales promelas*) larvae growth in 7-day tests using water samples collected from August 2003 to July 2004. Each value is the mean of 4 replicates with 10 fish in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg	mg	mg	mg	mg	mg
Aug-2003	0.39	0.38	0.33	0.33	0.33	0.33
Sep-2003	0.46	0.37	0.45	0.38	0.31	0.38
Oct-2003	0.32	0.38	0.32	0.37	0.31	0.29
Nov-2003	0.45	0.43	0.16*	0.45	0.34	0.45
Dec-2003	0.50	0.29*	0.34	0.39	0.43	0.48
Jan-2004	0.60	0.37	0.49	0.58	0.55	0.58
Feb-2004	0.57	0.55	0.56	0.60	0.63	0.63
Mar-2004	0.44	0.39*	0.32*	0.42	0.48	0.46
Apr-2004	0.59	0.57	0.63	0.54	0.56	0.60
May-2004	0.49	0.55	0.53	0.57	0.43	0.49
Jun-2004	0.42	0.42	0.40	0.45	0.36	0.40
Jul-2004	0.55	0.50	0.51	0.54	0.51	0.48

Table 22. Summary of *Daphnia magna* survival in 7-day tests using water samples collected from August 2003 to July 2004. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	%	%	%	%	%	%
Aug-2003	90	100	90	90	90	100
Sep-2003	60*	100	100	90	100	90
Oct-2003	60*	100	100	100	100	100
Nov-2003	90	100	89	100	100	90
Dec-2003	90	90	100	100	90	100
Jan-2004	95	58*	75	93	98	100
Feb-2004	98	93	100	98	100	100
Mar-2004	100	100	90	100	100	100
Apr-2004	100	100	90	90	90	100
May-2004	90	100	90	80	90	90
Jun-2004	90	100	100	90	90	100
Jul-2004	100	100	80	90	90	90

Table 23. Summary of *Daphnia magna* reproduction in 7-day tests using water samples collected from August 2003 to July 2004. Each value is the mean of 10 replicates with 1 animal in each replicate.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female	neonates per female
Aug-2003	30.1	33.5	29.0	24.4	33.5	26.7
Sep-2003	25.1	30.1	36.1	31.2	33.0	25.6
Oct-2003	23.3	48.1	52.8	41.5	33.8	23.0
Nov-2003	54.8	40.7	44.3	54.7	45.3	38.1
Dec-2003	59.0	58.7	64.9	73.6	64.2	68.7
Jan-2004	46.8	45.0	40.7	44.5	54.1	41.5
Feb-2004	59.4	59.0	60.7	54.3	60.0	59.0
Mar-2004	59.7	55.3	58.8	58.6	58.4	51.6
Apr-2004	35.5	34.3	35.9	34.6	21.7	15.7
May-2004	32.4	29.6	37.5	34.9	30.7	24.7
Jun-2004	25.8	29.8	25.6	16.7	19.0	30.0
Jul-2004	51.3	32.4	48.5	36.2	38.8	34.9

Table 24. Summary of *Selenastrum capricornutum* growth in 4-day tests using water samples collected from August 2003 to July 2004. Each value is the mean of 4 replicates.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal	Laboratory Control
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL	10^5 cells/mL
Aug-2003	11.9*	13.6	11.7*	13.9	14.5	10.9
Sep-2003	11.8*	15.5	14.5*	13.9*	15.9	12.2
Oct-2003	10.0	12.6	12.2	8.6*	9.9††††	8.7††††
Nov-2003	12.3	22.5	21.2	18.9	14.8	15.3
Dec-2003	0.7*	26.6	34.4	21.1*	25.0	18.5
Jan-2004	9.7*	21.1	5.9*	8.8	18.4	20.9
Feb-2004	0.5*	32.5	21.9	0.4*	25.0	23.1
Mar-2004	24.0*	39.2	27.5	33.1	29.9	29.3
Apr-2004	19.9	31.6	20.0	25.5	19.5	26.5
May-2004	19.3*	29.5	25.1	25.1	24.5	14.5
Jun-2004	12.1	25.2	18.1	21.5	15.4	22.4
Jul-2004	3.6*	13.1	16.3	17.5	12.5	10.1

Table 25. Summary of selenium concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, May 2004 to July 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR	SLDMWA/USBR
UNITS	µg/L	µg/L	µg/L	µg/L	µg/L
May-10-2004	51	0.5	23	0.8	<0.4
May-12-2004	44	0.6	23	0.6	<0.4
May-14-2004	56	0.6	23	0.5	<0.4
Jun-07-2004	49	0.8	39	0.7	<0.4
Jun-09-2004	43	0.8	37	0.7	<0.4
Jun-11-2004	52	0.5	44	0.7	<0.4
Jul-19-2004	35	0.9	21	0.5	<0.4
Jul-21-2004	25	0.9	19	0.4	<0.4
Jul-23-2004	35	0.7	21	<0.4	<0.4

Table 26. Summary of total suspended solids concentrations in grab water samples collected at study stations for use in laboratory toxicity tests, May 2004 to July 2004.

See Table 27 for explanation of footnotes and agency abbreviations.

LOCATION	Station B	Station C	Station D	Station F	Delta Mendota Canal
DATA SOURCE	SLDMWA	SLDMWA	SLDMWA	SLDMWA	SLDMWA
UNITS	mg/L	mg/L	mg/L	mg/L	mg/L
May-10-2004	60	94	81	109	6
May-12-2004	48	49	56	70	0
May-14-2004	68	74	79	136	0
Jun-07-2004	48	79	82	138	59
Jun-09-2004	64	68	83	172	38
Jun-11-2004	91	121	56	191	27
Jul-19-2004	48	39	46	115	30
Jul-21-2004	36	57	53	127	19
Jul-23-2004	66	65	56	75	28

Table 27. Explanations of footnotes and agency abbreviations.

Footnote	Explanation
CVRWQCB	California Regional Water Quality Control Board, Central Valley Region
SLDMWA	San Luis & Delta-Mendota Water Authority
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
e	Estimated value
.	Not applicable
<	Less than MDL. If needed in calculation, use 1/2 MDL
NA	Not analyzed - operator error, data will not be available in the future
NP	Not Provided. Data may be available in the future.
NT	Not tested
P	Pending, data not available at this time but will be available in the future
*	Significantly reduced from Delta Mendota Canal ($p<0.05$)
**	Sample re-analyzed and result confirmed.
†	DMC water failed to meet the survival (>80%) acceptability criteria.
††	Data from records of the Grassland Water District. Data is not subjected to the criteria documented in the Compliance Monitoring Program for the Use and Operation of the Grassland Bypass Project (1996) nor the Quality Assurance Project Plan for the GBP.
†††	DMC water failed to meet the reproduction (>10 neonates/adult) acceptability criteria.
††††	DMC water failed to meet minimum growth (10^6cell/mL) acceptability criteria.
‡	Control value exceeds suggested maximum variance (20%) acceptability criteria.
‡‡	Fungal growth observed on test organisms.
‡‡‡	Failed cell density requirement of 1E6 cells.
#	New testing laboratory with reporting limit of 0.4 µg/L as of June 1998.
v	Based on definitive bioassay, NOEC is 50 percent
D	Sample was dechlorinated